



Docket No.: 242963US0CONT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:

GROUP: 1712

Mitsuru KATO, et al.

SERIAL NO: 10/671,455

EXAMINER: SELLERS, R..

FILED: September 29, 2003

FOR: AQUEOUS RESIN COMPOSITION, AND METHOD OF MANUFACTURING  
A SEPARABLE FASTENER USING THIS COMPOSITION

DECLARATION UNDER 37 C.F.R. § 1.132

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

Sir:

Now comes Yukitoshi Higashinaka who deposes and states that:

1. I am a named inventor in the above-identified application.
2. I am a graduate of Tokyo University of Agriculture and Technology and received my engineering degree in the year 1981.
3. I have been employed by Kuraray Co., Ltd. or one or more subsidiary of Kuraray Co., Ltd. since 1981 and I have been conducting research in the field of separable fastener for 25 years.
4. I understand that the presently claimed invention is rejected as obvious in view of prior art that includes Japanese Patent No. 62-0112504 (i.e., JP '504) and U.S. Patent 5,231,738 (i.e., Higashinaka).
5. I have read the Higashinaka and JP '504 publications.
6. I understand that the Examiner stated in a communication from the USPTO dated July 14, 2006 that the Examples and Comparative Examples provided in the original specification are not sufficient to prove patentability of the claimed subject matter because

the ratings may be "dependent upon the opinion of the observer and cannot be scientifically corroborated in the absence of objective evidence."

7. In order to compare the presently claimed invention with the closest prior art and to prove that the presently claimed invention is significantly superior to the closest prior art, the following experiments were carried out by me or under my direct supervision and control.

#### Preparation of Separable Fasteners

8. A separable fastener of the claimed invention, i.e., Example 1, was compared with two comparative examples, i.e., Comparative Examples 1 and 4. The separable fastener of Example 1 was made from a polyurethane resin aqueous dispersion containing dimethylol butanoic acid (DMBA) whereas each of the Comparative Examples were made from dimethylol propionic acid (DMPA). The formulations of each of the polyurethane resin aqueous dispersions are shown in Table A below:

Table A

Polyurethane resin aqueous dispersion	Resin components (molar ratio)				
	Macromolecular polyol	Organic diisocyanate	Carboxyl group-containing compound	Tertiary amine	Chain extending agent
PU (1) [Example 1]	PTG1000 (1)	IPDI (3.4)	DMBA (0.75)	DEAE (0.67)	PIP (0.75) HH (0.65) BuAm (0.16)
PU (6) [Comparative Example 1]	PTG1000 (1)	IPDI (3.4)	DMPA (0.75)	DEAE (0.67)	PIP (0.75) HH (0.65) BuAm (0.16)
PU of [Comparative Example 4]**	PTG; 1000 (1)	IPDI (3.5)	DMPA (0.8)	Et <sub>3</sub> N (0.7)*	HH (0.68) PIP (0.935)

\*\* Comparative Example 4 is the same as Example 1 of JP '504.

\* Et<sub>3</sub>N is triethyl amine; abbreviated TEA.

PTG is polytetramethylene glycol

IPDI is isophorone diisocyanate

DEAE is diethylaminoethanol

PIP is piperazine hexahydrate

HH is hydrazine monohydrate

BuAm is n-butylamine

The polyurethane materials were mixed with a curing agent to form aqueous resin dispersion components according to Table B below:

Table B

	Aqueous resin dispersion component		PU/acrylic weight ratio
	Resin aqueous dispersion	Curing agent	
Example 1	100 parts PU (1)	3.0 parts CR-5L	100/0
Comparative Example 1	100 parts PU (6)	3.0 parts CR-5L	100/0
Comparative Example 4*	100 parts PU (9)	3.0 parts CR-5L	100/0

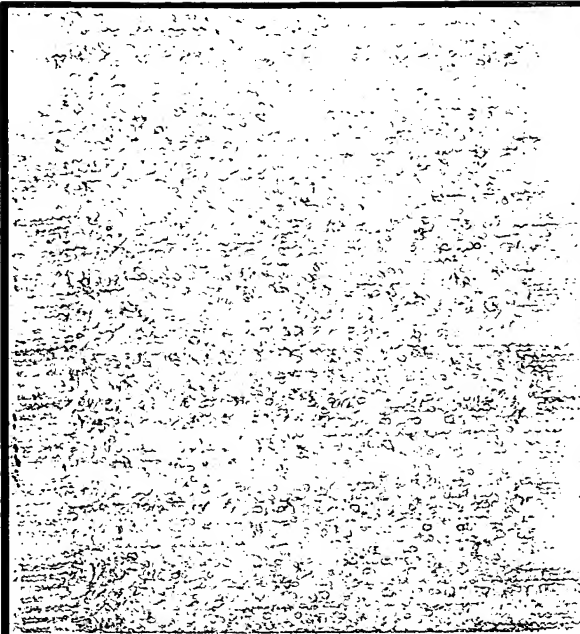
The thus-formed aqueous resin dispersion components were used to form the separable fasteners of Example 1 and Comparative Examples 1 and 4. The separable fasteners were subjected to testing with the results shown in Table C below:

Table C

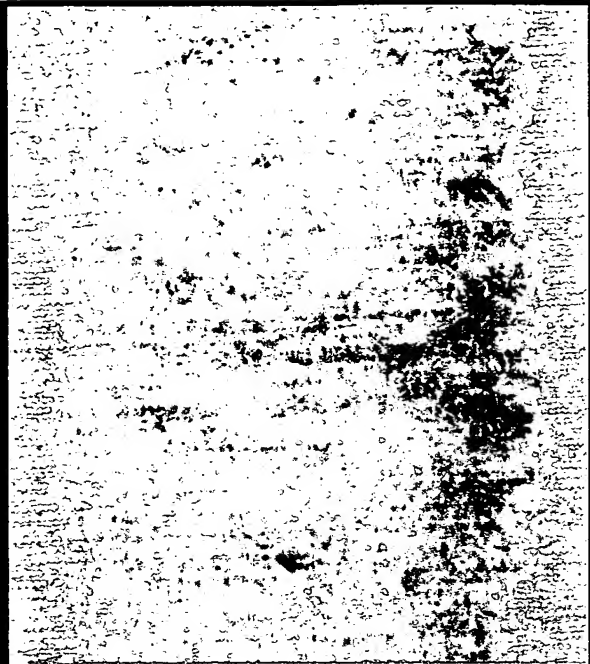
	Resistance to fiber dropout in washing	Washability	Resistance to chlorine bleaching agents	Resistance to crease whitening	Resistance to fiber dropout in washing after durability test			
					After 2 weeks	After 4 weeks	After 6 weeks	After 8 weeks
Example 1	5	5	5	○	5	5	5	5
Comparative Example 1	4	5	2	Δ	4	4	3	3
Comparative Example 4	4	5	1	Δ	4	3	3	2

9. Comparative Example 4 mentioned above is the same as Example 1 of the JP '504 publication cited by the Examiner. Comparative Example 4 is the closest prior art.

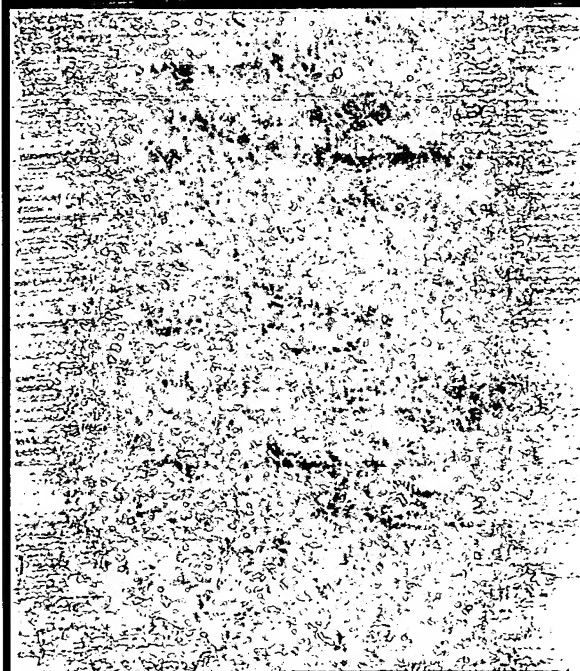
10. Table C above shows that Example 1 is a significantly superior separable fastener as evidenced by at least (i) resistance to fiber dropout in washing and (ii) resistance to chlorine bleaching agents. Photographs of the separable fasteners mentioned above are provided below:



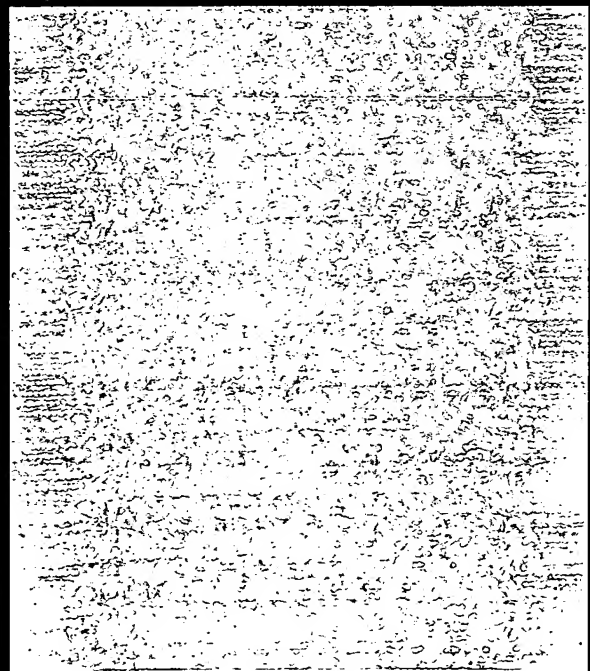
Example 1-3



Comp. Example 4



Comarative Example 1



Example 1

\* Note: Example 1-3 and Example 1 are the same.

11. The photographs above show that the separable fasteners of the Comparative Examples are significantly discolored and show balding that is not present in the inventive Examples. The photographs above show that the loops of the separable fastener of Example 1 (i.e., the separable fastener according to the claimed invention) are substantially intact whereas the loops of the Comparative Examples are least partially detached and in some spots the loops of the Comparative Examples are detached from the backing to give a balding effect.

12. The only difference between inventive Example 1 and Comparative Example 1 is the use of dimethyl butanoic acid instead of dimethyl propionic acid. It is my opinion that one of ordinary skill in the art would not foresee that such a substantial difference in resistance to fiber dropout would and resistance to chlorine bleaching agents would occur when making a separable fastener from DMBA instead of DMPA.

13. It is further my opinion that the above-mentioned tests are commercially and practically significant because the consumer, e.g., a hospital or medical worker, would be able to immediately tell the difference between the separable fastener of the invention and the comparative separable fastener due to the discoloration and balding readily evident in a separable fastener made from DMPA instead of DMBA.

14. It is further my opinion that Example 1 with Comparative Example 4, i.e., the closest prior art (Example 1 of JP '504) provide a valid comparison of the differences between separable fasteners made with DMBA instead of DMPA, regardless that some of the resin components of the polyurethane are different. For example, Example 1 uses slightly different ratios of IPDI in comparison to Comparative Example 4 (i.e., 3.4 versus 3.5, respectively); different amounts of DMBA versus the amount of DMPA (i.e., 0.75 versus 0.8, respectively); and different tertiary amine (i.e., DEAE vs. Et<sub>3</sub>N (a.k.a. TEA)) and different

chain extending agent composition. However, it is my opinion that those of ordinary skill in the art would readily recognize that these differences are not substantial and would not be responsible for the substantial differences in resistance to fiber dropout and resistance to chlorine bleaching agents shown in the Table C above.

15. It is my opinion that the data described above and summarized in Tables A-C above show that the use of DMBA provides a separable fastener that is significantly superior in comparison to separable fasteners made from DMPA with respect to at least resistance to fiber dropout in washing and resistance to chlorine bleaching agents, and that such a difference would not have been foreseen in the absence of the data provided by the specification of the present application.

16. It is further my opinion that the differences in Example 1 and Comparative Examples 1 and 4 is due to the use of DMBA in place of DMPA and there is no reason to expect that such differences would not be evident in other separable fasteners falling within the scope of the present claims and thus the data of Tables A-C is commensurate in scope with the claimed subject matter.

17. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

18. Further deponent saith not.

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2006.9.27.

Date